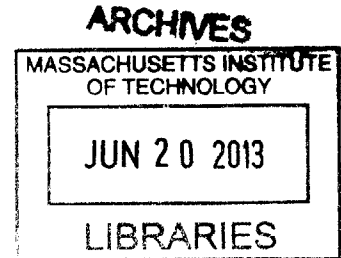


Challenges in Implementing Green Workforce Development Training

By

Louise H. Yeung

B.A. in International Affairs
George Washington University, 2008
Washington, D.C.



Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2013

© 2013 Louise H. Yeung. All Rights Reserved

The author hereby grants to MIT the permission to reproduce and to
distribute publicly paper and electronic copies of the thesis document in
whole or in part in any medium now known or hereafter created.

Author _____
Department of Urban Studies and Planning
May 23, 2013

Certified by _____
Associate Professor Judith A. Layzer
Department of Urban Studies and Planning
Thesis Supervisor

Accepted by _____
Associate Professor P. Christopher Zengras
Chair, MCP Committee
Department of Urban Studies and Planning

CHALLENGES IN IMPLEMENTING GREEN WORKFORCE DEVELOPMENT TRAINING

Louise H. Yeung

Submitted to the Department of Urban Studies and Planning on May 23, 2013
in partial fulfillment of the requirements for the degree of Master in City Planning

ABSTRACT

To meet the labor demands of green economic development, workforce development programs are increasingly training low-income workers for living wage jobs that contribute to environmental services or benefits. Yet, effectively preparing workers for jobs in emergent green economies, which can span many different sectors from energy efficiency to waste management, presents significant challenges for job training programs in practice. This thesis investigates the difficulties of adding a green dimension to job training while still meeting the basic employment objectives of workforce development programs. Through the experiences of the Oakland Green Jobs Corps and the Baltimore Center for Green Careers (BCGC), I analyze the mechanisms through which each program has influenced labor supply and demand to enable jobs in the green economy. Ultimately, the two cases highlight the tradeoffs between achieving green objectives and securing employment for disadvantaged workers at scale. In shedding light on how and why different programmatic decisions have influenced performance outcomes, this thesis aims to inform other cities' decisions in developing green jobs training initiatives.

THESIS SUPERVISOR: Judith A. Layzer, Associate Professor of Environmental Policy

ACKNOWLEDGMENTS

Completing this thesis would not have been possible without help and support from many people along the way. First and foremost, I would like to thank my advisor, Judy Layzer, for her invaluable feedback and encouragement to continually refine my thinking and writing. I would also like to thank my reader, Karl Seidman, who provided me with expertise and guidance.

Thank you to the staff at Cypress Mandela, Laney College, Civic Works, and Oakland and Baltimore city governments for their cooperation and enthusiasm in helping me to conduct my research.

Last, but not least, I am grateful for having such a great DUSP community over these last two years, for both funding support through the Emerson Travel Grant and for the kindness of the department's students, faculty, and staff. In particular, many heartfelt thanks to my wonderful thesis group—Christine Curella, Dan Rinzler, and Melissa Higbee—for their inspiration, wisdom, and advice on many early iterations of the thesis, as well as my officemates—Brian Daly and Katherine Buckingham—for their company, motivation, and welcome distractions that helped me make it through long afternoon doldrums and late-night writing sessions.

CHALLENGES IN IMPLEMENTING GREEN WORKFORCE DEVELOPMENT TRAINING

Growing recognition that current economic practices emphasize monetary profits at the expense of social and environmental benefits has given rise to an alternative framework for green economic development (Jones 2008). By focusing on industries and activities that improve environmental and socioeconomic conditions, green economic development aims to reconcile often-competing economic, social, and environmental agendas. To meet the labor demands of green economic development, workforce development programs are increasingly training low-income workers for green sector jobs.

Although many people loosely use the term “green job” to refer to any environmental job, the green jobs movement provides a more robust definition. Green jobs have the following characteristics: they (1) provide environmental services or benefits, (2) pay living wages, (3) offer career ladders and room for advancement, and (4) include a range of low- to high-skilled positions (Green For All 2008; Pinderhughes 2007). Green jobs represent the gold standard of sustainable labor practices by simultaneously improving environmental quality, growing local economies, and providing work opportunities for people with high barriers to employment. By integrating the climate and social justice movements, the green jobs movement offers a way to resolve to the dual crises of “radical socioeconomic inequality” and “rampant environmental destruction” (Jones 2008).

Green jobs have become a hopeful solution for employing disadvantaged workers. Many researchers and advocates have identified significant potential for low-skilled or

dislocated workers to fill green positions. As Robert Pollin of the University of Massachusetts found in a nationwide study of green jobs, of the 1.7 million green jobs expected to be created in the United States, over 50% could be filled with employees with a high school diploma or less (Pollin, Wicks-Lim, and Garret-Peltier 2009). The Brookings Institution reported that as a whole, workers in clean economy jobs are less educated while enjoying 13% higher median wages, than the national average (Brookings 2009).

Yet, despite the promise of green jobs, intentionally creating and implementing pathways for those disadvantaged workers to successfully enter these green jobs remains an obstacle for workforce development programs. On the environmental side, sustainability strategies are increasingly framed in terms of economic and job creation benefits.¹ Sustainability and environmental plans now commonly include projections of the number of jobs created. While the goals and rhetoric of green jobs have firmly taken root in many places, many fall short in providing concrete plans to ensure that those benefits will reach communities most in need.

At the same time, workforce development programs have begun to face several challenges in integrating environmental objectives into job training curricula. Because green jobs span across multiple industries, the occupational skills needed for green jobs can be hard for training programs to define, quantify, and target. Although it does not have an official North American Industry Classification System category for green jobs, the Bureau of Labor Statistics (BLS) defines green jobs as providing direct or indirect green goods or services, including specialized inputs and distribution of those goods or services (BLS

¹ See, for example, workforce references in Sustainable DC, PlaNYC, and Sustainable Chicago 2015.

2010). The BLS includes seven categories of green economic activity: (1) renewable energy, (2) energy efficiency, (3) greenhouse gas reduction, (4) pollution reduction and cleanup, (5) recycling and waste reduction, (6) agriculture and natural resources conservation, and (7) education, compliance, public awareness, and training (BLS 2010). Each of these categories entails vastly different sets of skills, firms, and pathways to enter the labor markets.

Not only is the green economy very fractured, it is also relatively small. Even in aggregate, the categories only provided a total of 3.4 million jobs in 2011 (BLS 2011). This number pales in comparison to other sectors often targeted in workforce training programs, such as healthcare, which employs over 17 million people, and manufacturing, which employs nearly 12 million people even after the industry's nosedive after the recession (BLS 2013). Tapping into fastest growing green sectors, such as renewable energy, energy efficiency, and greenhouse gas reduction, is difficult as these industries are still nascent and evolving.

Given these many challenges of employing workforce strategies to foster green economic development in practice, this thesis investigates the difficulties of adding a green dimension to job training while still meeting the basic employment objectives of workforce development programs. Through the experiences of the Oakland Green Jobs Corps and the Baltimore Center for Green Careers (BCGC), I analyze the mechanisms through which each program has influenced labor supply and demand to enable jobs in the green economy. I base my findings on 18 in-depth interviews with workforce training program staff; community college program coordinators; municipal officials in economic

development, planning, and environmental agencies; local workforce investment boards; and community organizations.

While both are highly regarded, city-supported, independently operated programs, the initiatives in Oakland and Baltimore have taken divergent approaches to green workforce training with contrasting results. Although the Oakland Green Jobs Corps has had difficulty ensuring job placements in green sectors, the broader nature of its skills training enables greater worker flexibility in the labor market. BCGC's innovative model of incorporating social entrepreneurship into job training efforts has directly and effectively supported Baltimore's emerging energy efficiency sector. This approach, however, has also resulted in significant constraints to program size and uncertainties in long-term job security for its trainees. Ultimately, the two cases shed light on how and why different programmatic decisions have influenced performance outcomes and highlight the tradeoffs between achieving green objectives and securing employment for disadvantaged workers at scale.

THE EVOLUTION OF GREEN JOBS TRAINING PROGRAMS

The concept behind the green jobs movement is not new; environmental and social justice advocates have long understood the impact of poor environmental quality on economic opportunities and other indicators of social development. But both Oakland and Baltimore's program objectives of training disadvantaged workers for green, living wage jobs comes directly out of scholarship and advocacy that emerged in the 2000s. During that time, environmental groups, civil rights advocates, progressive businesses, and

organized labor coalesced to promote sustainable economic investments, including a trained green labor force. Oakland-based organizations, including the Apollo Alliance, the Ella Baker Center for Human Rights, and Green For All, were at the forefront of the movement working to build “green pathways out of poverty” (Pinderhughes 2007).

Widespread advocacy efforts brought the discussion of green jobs to national prominence. In 2007, Congress passed the Green Jobs Act as part of the Energy Independence and Security Act. With \$125 million in federal funding allocated for green jobs, the act supported new training programs in energy efficiency and renewable energy. Housed under the 1998 Workforce Investment Act (WIA), these new programs explicitly added a green focus to the traditional public workforce system for the first time (H.R. 2847 2007; H.R. 6 2007).

Other than stipulating that programs prepare workers for clean energy jobs, neither WIA nor the Green Jobs Act specifies how such green jobs programs should be designed or whom they should target. The Green Jobs Act does encourage training for veterans, at-risk youth, formerly incarcerated offenders, and dislocated workers, though it does not limit green jobs training to those disadvantaged populations. In practice, however, many green workforce training programs do serve as second chance programs that provide remedial education, vocational training, credentials, and job placement support for people with high barriers to employment.

As green job programs have become more prevalent, the workforce development system has taken a sector approach to target a wider range of green occupations beyond renewables and energy efficiency. By first identifying job opportunities in regional

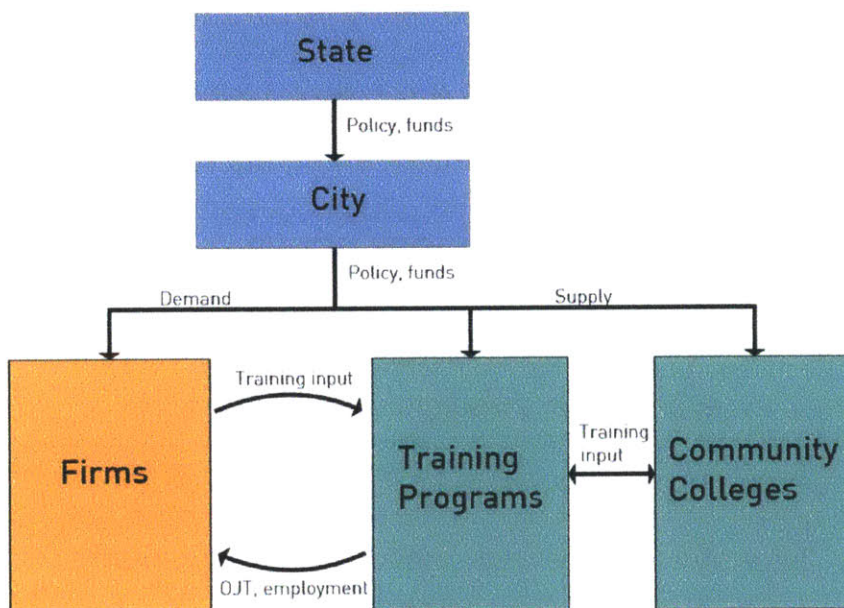
economies and then structuring training to meet those job needs, sector-based workforce development fosters stronger linkages between labor supply and demand (Pindus et al 2004). Sector-based strategies are particularly helpful in growing emerging economies, such as the green sector, by equipping the labor force with a new set of skills.

A national push toward sectoral initiatives in the public workforce system occurred in the 2000s through pilot programs in workforce investment boards (WIBs), the local entities that administer WIA funding and service provision. Over the subsequent decade, the Department of Labor began encouraging more WIBs to move to sectoral strategies. This push has prompted WIBs to restructure their plans and operations to pair job training with business attraction and employer relationship building. While the sector approach is already instituted in Maryland, California has more recently shifted in that direction, and the Oakland WIB has only just begun to identify specific sectors it intends to pursue (Giordano 2013).

Pindus et al. lay out three types of sector-based approaches for engaging employers: (1) targeting a single large employer, (2) training for one type of occupation that may span multiple industries, and (3) working with firms within a single industry (Pindus et al 2004). The Oakland Green Jobs Corps has primarily adopted the third approach to develop a stronger labor force for a multitude of firms and jobs in construction trades. BCGC has generally taken the second approach by focusing more narrowly on home weatherization installers in the energy efficiency industry.

These divergent approaches are reflected in the specific mechanisms that each program has used to influence the labor market. As shown in Figure 1, labor markets can be impacted by a variety of tactics that fall into two main categories: supply- and demand-side strategies. Supply-side strategies seek to increase quantity and improve qualifications of the labor force through skills training and certification for green occupations. Demand-side strategies affect the quantity and accessibility of green jobs. This can include public sector job provision, as well as policymaking that spurs additional job creation in the

FIGURE 1: WORKFORCE DEVELOPMENT SYSTEM



private sector. In focusing on a larger gamut of occupations within the construction industry, the Oakland Green Jobs Corps' focus on training for many construction-related occupations has required the program to offer trainings and certifications

for a larger gamut of hard and soft skills for a strategy heavy on the supply-side. In contrast, BCGC's focus on a single industry and single occupation has allowed it to initiate a set of programs to both generate and fill labor demand.

The program design decisions that each case has adopted have affected program outcomes: Baltimore's relative success in achieving high program completion and job

placement for disadvantaged workers in a new green sector are moderated by B'More Green's extremely small program size, while Oakland's ability to train a larger workforce has led the program to forgo some of its green objectives. I utilize the following categories to measure program performance and analyze the design and implementation factors that have enabled those outcomes:

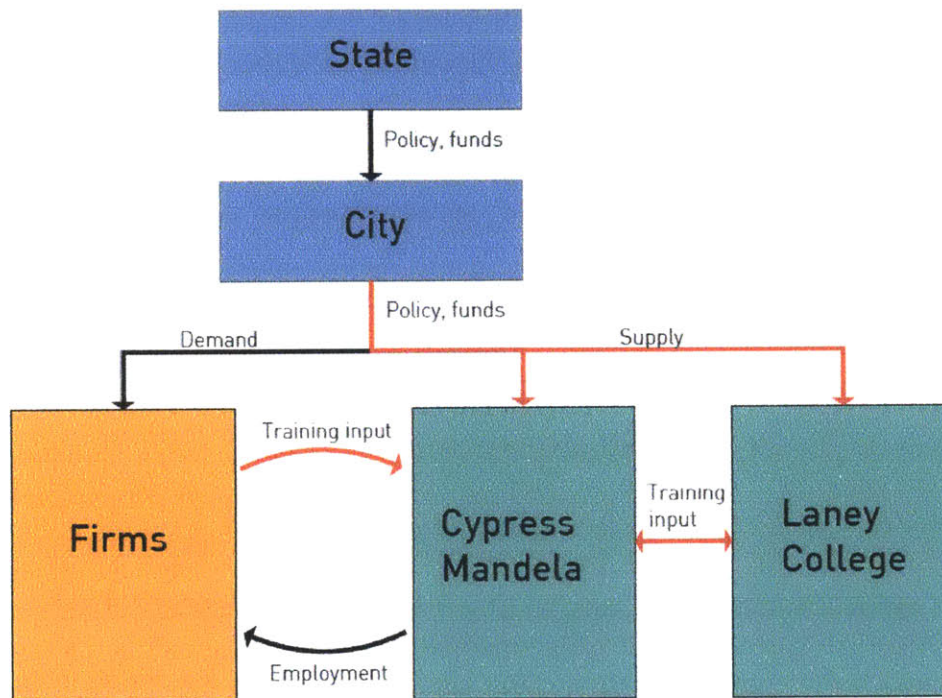
- *Program completion*: How many people do the programs train? How many people drop out?
- *Job placement and retention*: How many graduates are successfully placed into employment after completing the programs? Are they able to maintain employment?
- *Job type*: What occupations do graduates hold? Do these match the jobs for which they were trained?
- *Target demographics*: Are the programs helping the target group that they are designed to help?
- *"Greenness" of jobs*: Are people entering into jobs that actually contribute to the green economy?

SUPPLY-SIDE STRATEGIES IN THE OAKLAND GREEN JOBS CORPS

In taking a supply-side approach to workforce development, the Oakland Green Jobs Corps focuses entirely on building a larger and better skilled green labor force in its establishment, organizational structure, and training curriculum. From the get-go, the inclusive process of creating the Corps allowed several city, workforce, and non-profit groups to provide input into shaping their ideal training curriculum. Structurally, the partnership between the job training and community college vocational program strengthens the program's training capacity. Content-wise, the actual training curriculum concentrates heavily on individual betterment and formal credentialing, reiterating the program's engagement with the labor market from the supply side. Because of the extensive focus on improving how training is conducted, the program does not address

sources of new green job creation. Instead, it draws upon external existing union processes for job placement.

FIGURE 2: OAKLAND GREEN JOBS CORPS



Program Design and Structure

As a hotspot of green jobs scholarship and activism, as well as one of the first municipalities to launch a city-sponsored green workforce training program, Oakland is recognized as a national leader in the field. The Oakland Green Jobs Corps was designed through a highly collaborative and iterative process. By drawing upon the diversity of research and experience of local training providers, government agencies, academic institutions, and community groups to establish the requirements for the Corps, many stakeholders were able to influence what the program would look like. Most of the

attention focused on enhancing the scope the training curriculum and the nature of training provision, leading to a subsequent program design that was very labor supply-oriented.

First and foremost, the establishment of the Corps served as an opportunity to convene stakeholders to frame overall green jobs objectives and strategies in the city. The idea for the Green Jobs Corps arose when the City of Oakland received windfall settlements in 2002 and 2006 from two energy utilities that had been overcharging customers. According to the settlements, the funds from Williams Energy and Reliant Energy were to be spent on “activities that promote alternative energy production and energy efficiency in the City” (City of Oakland 2007). In mid-2007, the city began to move forward with concrete plans for appropriating the settlement money (City of Oakland 2007). City staff compiled potential project ideas, ranging from solar installations to greenhouse gas reduction initiatives (Oakland City Planning Commission 2007).

A few events built momentum around the idea of channeling the funds to green jobs at this time. The University of California Berkeley had just commissioned and completed the first in-depth Bay Area survey of green businesses and jobs (Pinderhughes 2007). Authored by Raquel Pinderhughes, a professor at San Francisco State University, the study introduced the Pathways Out of Poverty model as a framework training disadvantaged people for green sector work (Pinderhughes 2007). Later that year, Oakland-based environmental and civil rights leader Van Jones founded Green For All, a national nonprofit to conduct research and promote policies for building the green economy and reducing poverty.

A coalition of advocates from the Ella Baker Center, the East Bay Alliance for a Sustainable Economy, and the Oakland Apollo Alliance; academics from Berkeley and San Francisco State University; and green businesses came together to push for a citywide green workforce development initiative. The lobbying paid off when the Oakland City Council passed a resolution in June 2007 permitting the city to use \$250,000 of the settlement money to fund what became the Oakland Green Jobs Corps (City Council Resolution 2007).

In February 2008, the City of Oakland issued a request for proposals (RFP) for a green jobs training provider (City of Oakland 2008a). The RFP's overarching goals for the Corps were fourfold:

- (1) To promote social equity and poverty reduction by providing people with barriers to employment opportunities to earn living wages in the emergent green economy
- (2) To tackle climate change by improving energy efficiency and increasing renewable energy generation
- (3) To support green business growth in Oakland
- (4) To elevate Oakland's position as a leader in green economic development (City of Oakland 2008a).

Because Pinderhughes served on the advisory council for developing and reviewing applications, the RFP was based on her Pathways out of Poverty model (City of Oakland 2008a; Pinderhughes 2007; Pinderhughes 2013). The advisory council also included five additional members from the city and private sector. With input from the Ella Baker Center and the Oakland Apollo Alliance, the council drafted a list of requirements that all proposed programs had to meet:

- Build foundational skills in basic literacy (such as math, English, writing, computer, and communications)
- Build life skills (such as financial management and other soft skills)

- Include an environmental literacy component to help participants understand their individual jobs in the context of broader sustainability and environmental efforts
- Include 480 hours of job-related classroom training
- Include a paid internship or on-the-job training
- Provide support services and case management for assistance with child care, transportation, nutrition, drug/alcohol counseling, and other such issues
- Build “key links to educational institutions, labor unions, and community-based organizations”

Prior to this point, green jobs training had not typically included environmental literacy or paid, on-the-job training (Pinderhughes 2007).

While the city set forth basic conditions for the Corps, the program design emerged from the applicants themselves. The city received three applications: one from Civicorps (a nonprofit training and civic education center that also runs a public charter high school), another from the Regional Technical Training Center (a center for technical training, career development, and small business assistance), and a third from Laney College and the Cypress Mandela Training Center. Ultimately, the city selected the joint application from Laney College, a vocational education-oriented community college, and Cypress Mandela, a pre-apprenticeship skilled trades training program, to carry out the Green Jobs Corps (City of Oakland 2008a). Once selected, Cypress Mandela and Laney worked with staff from the Ella Baker Center to develop the program design.

Because the idea for the Corps stemmed from lobbying efforts, advocates had to build a strong coalition of supporters for the idea from the very beginning. The collaboration necessary to successfully advocate for the Corps allowed the organizational values and objectives, white papers, policy recommendations, and gray literature from these stakeholders to be merged into a unified vision for green-collar job development.

This vision, which was a refined version of the Pathways out of Poverty model, was then directly institutionalized into the regional workforce system.²

The structure of the Oakland Jobs Corps' program reinforces the organization's focus on improving labor supply in both structure and content. The partnership between Laney College and Cypress Mandela combines two major training providers to carry out the Green Jobs Corps. Although the committee selected their application specifically because of the partnership (Kim 2013), both parties' strengths lie as training providers rather than strong intermediaries that could build better relationships with green firms. Created in 1993 to train residents for construction jobs after the Loma Prieta Earthquake, Cypress Mandela was known for working with low-income west Oakland communities. Cypress Mandela was to provide the recruitment, assessment, basic skills training, job readiness, and social services for the new Green Jobs Corps. Cypress Mandela and Laney College would jointly conduct specific skills training for various green jobs—particularly taking advantage of the state-of-the-art facilities, equipment, and instructors at Laney—while Cypress Mandela would arrange paid internships or on-the-job training and ultimate job placement through local unions.

Approaching the application process collaboratively allowed Cypress and Laney to think of ways to work together to bolster training provision and curriculum development. As a direct result of the Green Jobs Corps, the two institutions adopted a practice of cross-teaching. Moreover, Laney College was able to donate equipment to the Cypress

² The Oakland model was even brought to the national spotlight with the (albeit short-lived) appointment of Van Jones as the White House's Green Jobs Czar in 2009. As one of the most vocal Oakland-based champions of green jobs and founder of Green For All, Jones' appointment helped spread the Pathways out of Poverty framework to the stimulus act and other programs across the country.

Mandela facilities for the new green-specific modules, such as solar installation. Laney College also began to allow Green Jobs Corps and other Cypress trainees to earn college credit from Laney courses. The opportunity to accumulate college credits has allowed some participants to go on to pursue associate's degrees (Rivas 2013). Cypress Mandela's Director of Training described the Green Jobs Corps as catalyzing a "great venture" between the two programs (Hodges 2013).

Training Curriculum

The Green Jobs Corps' curriculum itself is well-rounded and holistic. Geared toward increasing competitiveness in the job market, the Corps emphasizes building individual workers' character and credentials. The mix of hard, soft, and environmental literacy skills in the training curriculum aims to develop workers' worldviews and senses of identity alongside technical know-how.

Derived from the idea of improving worker competitiveness through better attitude and habit formation (an approach that took root in the late 1980s), the Corps' training method equips participants with new behavioral habits alongside new technical skills (Barton 1990; CED 1984; Cappelli 1995). This attitude-based approach reveals the program's premise that the key to facilitating jobs is through improving individual workers' character and abilities.

The most distinctive aspect of the Corps is Cypress Mandela's boot camp-style training. Each day at Cypress Mandela begins at 7:00 am sharp for a uniform check—shirttails must be tucked in, shoes shined, and pants pressed. Instructors take attendance

during a series of warm-up drills, and students spend the remainder of the hour mopping, sweeping, dusting, and replenishing supplies for the 38,000 square-foot facility. The participants spend the rest of the day in three classes, which rotate throughout the 16 weeks. This rigid environment is meant to condition participants to adopt healthier lifestyles and attitudes that prepare them for the discipline necessary to thrive in a workplace (Hodges 2013). For example, the life skills units address typical professional development topics, such as creating resumes and operating computers, as well as interpersonal topics, such as maintaining healthy relationships.

Building upon the worker-centric approach of self-improvement, the Corps' training is heavily certification-oriented. The typical trainee receives over ten certifications upon program completion. In addition to general credentialing in CPR, first aid, and worker safety, participants are also spend eight weeks pursuing 206 hours of environmental certifications. The certifications offered rotate depending upon anticipated job openings, but include a variety of EPA and OSHA certifications in occupational health and safety, confined space safety, asbestos removal, hazardous materials health and awareness, advanced Hazmat, accident prevention and investigation, emergency response and chemical spills, disaster sites, brownfields remediation, and mold awareness and infection. Non-certification courses cover skills such as solar installation, energy efficiency, carpentry, blueprint design, green building performance, and ironworking. For advanced technical courses that require more advanced facilities such as welding, students enroll in classes at Laney College alongside other community college vocational students.

The curriculum also includes an environmental literacy component, one of the main innovations of the Pathways out of Poverty model. The Green Jobs Corps curriculum stresses environmental education to help participants understand how they contribute to greater sustainability efforts. Students discuss the importance of environmental protection on personal and global levels, from neighborhood air pollution to climate change. The program also embeds environmental consciousness into the skills training and program operations. Participants learn about sustainable material sourcing and energy efficient building construction, operations, and maintenance. For instance, all classroom materials come from recycled materials and are reused from year to year (Hodges 2013).

Employer Relationships in On-the-Job Training and Job Placement

The Corps concentrates on filling construction trade positions with workers newly skilled in environmental practices, rather than generating growth in new green sectors. Most trainees complete on-the-job training through paid union apprenticeships, and the Corps relies upon union channels for initial and longer-term job placements. As apprentices (and later, journeymen), workers are placed into employment on various construction projects. Cypress Mandela's existing relationships with unions has allowed Green Jobs Corps graduates direct entry to the region's major unions, including the carpenters, ironworkers, electrical workers, plumbers and pipefitters, operating engineers, and cement masons unions. Trainees are matched to jobs through an occupational interests survey in which they rank their first through fourth choice professions (Shanks 2013).

Cypress Mandela works closely with unions to find placement for on-the-job training and apprenticeships. Official Green Jobs Corps sponsors, such as Caltrans (the state Department of Transportation), the Federal Highway Administration, and the Building and Construction Trades Council, make up the program's major employers. As sponsors, they not only provide fiscal support and curriculum input, but they also notify Cypress Mandela of upcoming job opportunities. For example, before Pacific Gas and Electric rolled out a new smart meter program, it worked with Cypress Mandela to line up Green Jobs Corps graduates as the first round of linemen and technicians to install and read the new smart meter system. Graduates tend to be hired in a similar manner for other large-scale regional development projects. Around 60 Cypress graduates are involved with Bay Bridge construction as of 2013, and a sizable number also work on the BART extension from the Coliseum to the Oakland International Airport (Hodges 2013). While not all of these jobs are technically in green sectors, many require substantive knowledge of green practices. For instance, modules on energy-efficient green building construction and sustainable materials sourcing are embedded into more general construction units. After placements are made, all employers are encouraged to go back to Cypress if they have issues with any Cypress graduates, regardless of how long the graduate has been out of the program.

Implementation

In practice, the training providers became more distanced from green employers during program implementation. The Ella Baker Center was responsible for the initial design and

supervision of the Green Jobs Corps. After the first month, Laney and Cypress directly managed the program with loose oversight from the city (Kirsch 2013; Kim 2013). After the initial stage, however, neither Ella Baker nor the city had formal role overseeing the implementation of the Corps (Kim 2013). Several of the original masterminds behind the program cited the inability to provide sustained input into managing the Corps as a major impediment to ensuring that it stayed true to its stated goals. For example, the Ella Baker Center initially established the Oakland Green Business Council to support the growth of new Oakland-based green firms, which would have increased labor demand in the region. Because Cypress and Laney College ended up relying on prior employer relationships instead of utilizing the council, it eventually dissolved.

The original lobbying coalition also intentionally avoided engagement with the WIB and instead relied upon the Mayor's office to house the initiative, disconnecting the Corps from the WIA system. Run out of the city's Department of Economic and Workforce Development, Oakland's WIB is widely considered to be ineffective. Despite significant public and private sector activity on this front in the last several years, the Oakland WIB still does not have a framework to guide green workforce strategy in the municipality (Giordano 2013). These two implementation challenges in part explain the Corps' loose connections to labor demand, and why its graduates tend to be hired for occupations that extend outside of green industries.

Box 1: Performance Snapshots of the Oakland Green Jobs Corps

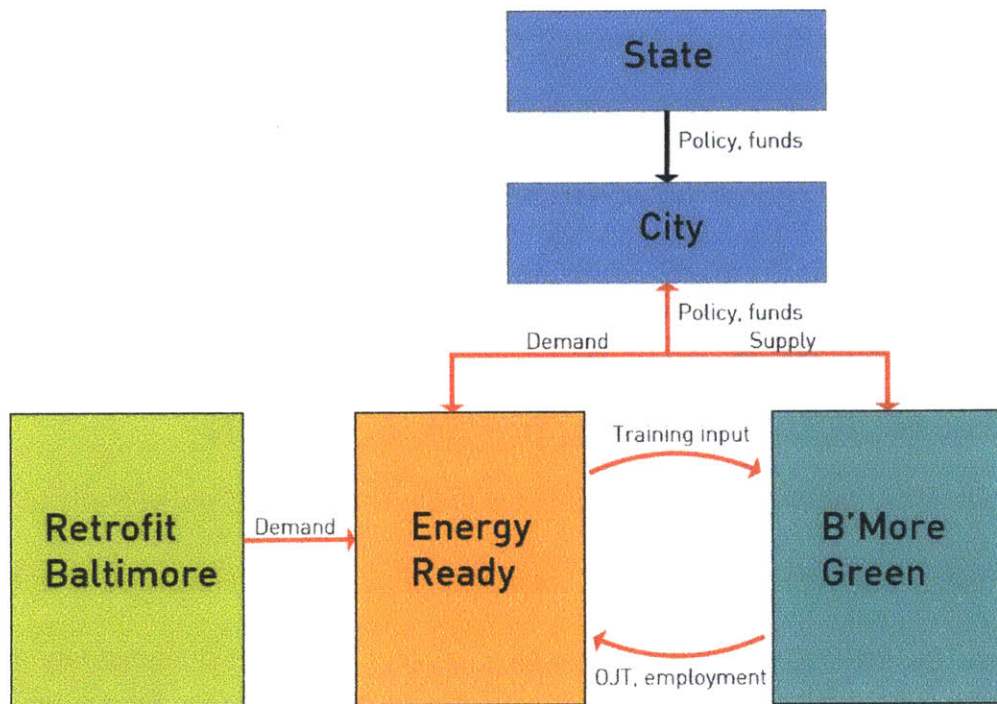
- *Program size:* About 65-70 people per cohort and 125 graduates per year
- *Program completion rate:* 85-90%
- *Job placement rate:* 70%
- *Average wage:* Usually ranges from \$12-\$16 per hour
- *Demographics:* 76% African American, 9% Hispanic, and 6% Asian American.

Green Jobs Corps graduates enter a variety of construction and building trade jobs that are not necessarily in green sectors, but often entail embedded sustainable building practices. The top three occupations for graduates are carpenters (30%), general laborers (16%), and cement masons (6%). As of 2011, 31 people have been placed to work on Oakland Coliseum Arena redevelopment, 29 to Bay Bridge retrofits and repairs, 16 to the PG&E Volt Installation project, and 9 to the City of Oakland Kaiser Hospital project (Cypress Mandela 2011). As far as the makeup of program participants, the Corps works hard to serve Oakland residents of color and place them in Oakland-based firms to keep economic growth within the city. The Corps does not collect data on participants' veteran or criminal status, but estimates that about one third have a criminal history (Shanks 2013). Although the program only has a 70% job placement rate, it operates at a fairly large scale for a job training program and moreover, offers good job security in union-tracked positions to those who are placed.

DEMAND-SIDE STRATEGIES IN THE BALTIMORE CENTER FOR GREEN CAREERS

Green jobs training efforts in Baltimore, which have been led by the Baltimore Center for Green Careers' B'More Green Occupational Skills program, influence the workforce system through regulations and programs that drive labor demand. In comparison to the Oakland Green Jobs Corps' generalized training that covers many aspects of construction trade occupations, BCGC only trains participants for minimal skills necessary for home weatherization. The Center instead reinforces its job training efforts with complementary programs for promoting and conducting weatherization retrofits. BCGC's suite of programs work together to support the newly flourishing energy efficiency industry by simultaneously training workers for weatherization, providing weatherization services, and boosting demand for those services. By internalizing on-the-job training and job placement through a social enterprise arm, BCGC has strengthened the feedback loops between training and employment for home weatherization.

FIGURE 3: BALTIMORE CENTER FOR GREEN CAREERS



Organizational Structure

As an initiative of Civic Works, the city's urban service corps, BCGC's vision entails growing and transforming the market of residential energy efficiency to serve traditionally marginalized populations (Mello 2013). BCGC houses programs for job training, demand-generation, and weatherization, giving it the ability to influence multiple aspects of the workforce system in the energy efficiency sector (see Figure 3). The initiative was not originally structured this way, but evolved as Civic Works expanded its programming to take advantage of new opportunities.

Established in 1993, Civic Works has grown to encompass a variety of community development initiatives, from transforming vacant lots to assisting low-income home

weatherization. As Baltimore's service corps and AmeriCorps program, Civic Works specializes in serving people with high barriers to employment. Civic Works launched its first job-training program for brownfields in 2003 under the B'More Green Occupational Skills Training Program. For five years, B'more Green focused solely on brownfields remediation. During that period, the workforce aspect largely remained separate from the other Civic Works activities. While B'More Green continues to conduct brownfields training, since 2008, it has devoted most of its attention and programming toward energy efficiency initiatives.

In 2008, Civic Works established a social enterprise called EnergyReady to provide home weatherization and retrofits. A small operation, EnergyReady employs a rotating crew of four to six full-time employees, as well as a varying number of temporary trainees. Recognizing the need to improve access to weatherization information in low-income communities, in 2010 the organization also initiated Retrofit Baltimore, a demand-generation program, to complement weatherization efforts. Retrofit Baltimore not only provided outreach and resources to help low-income communities to understand the options and benefits of weatherization, it also directly fed demand for EnergyReady's weatherization services.

B'More Green's addition of a weatherization track was actually an outgrowth of those two programs. Only after engaging directly in weatherization contracting did Civic Works decide to integrate job training for energy efficiency into the mix in 2010. Later that year, Civic Works established the Baltimore Center for Green Careers to house EnergyReady, Retrofit Baltimore, and B'More Green together. Now, EnergyReady

simultaneously provides an outlet for on-the-job training and job placement for B'More Green graduates. EnergyReady is a self-sustaining venture for its full-time employees but requires wage subsidies from training program grants in order to provide on-the-job training (Fundales 2013).

Policy Links

Anticipating and reacting to the job opportunities resulting from new energy regulations underpins BCGC's demand-driven approach to workforce development. Civic Works' decision to get involved in weatherization was a direct response to policy and funding that fueled a boom in the energy efficiency sector. Two events happened at around the same time that allowed energy efficiency in Baltimore to flourish. First, in 2009 Baltimore City received \$15.7 million from the American Recovery and Reinvestment Act (ARRA) to conduct weatherization low-income homes (Fisher 2009). Run out of the Department of Housing and Community Development, the Weatherization Assistance Program allocated funds for 2,400 household units over three years at an average estimated cost of \$6,500 per unit (Strong 2012).

Just prior to ARRA funding, in 2008 the State of Maryland legislated an energy efficiency resource standard with a statewide goal of achieving a 15 percent reduction in per capita energy consumption and peak demand by 2015 (DSIRE 2012). The policy, known as EmPOWER Maryland, specifically requires electric utilities to lower energy use under the oversight of the Public Service Commission (PSC) (DSIRE 2012). The

requirement prompted utilities, including Baltimore Gas and Electric, to launch residential weatherization programs to meet that goal.

Although EmPOWER Maryland passed in 2008, the local utility programs did not take off until late 2009. Because Baltimore City had demonstrated such early success in weatherization using stimulus funds—weatherizing nearly double the number of expected homes—the PSC transferred the responsibility of the actual weatherization programming from the utility to Baltimore (Strong 2013).

Through a contract bid process, the city awarded 11 contracts to the lowest bidders, although only six ended up ultimately receiving the contracts due to some logistical challenges (Strong 2013; Mello 2013). While most contracts went to private contracting companies, one went to EnergyReady, which began carrying out residential weatherization for the city in July 2009. According to the municipal program coordinator, their association with workforce training or stated mission of employing people with high barriers to employment was not a factor in the initial contract award decision-making. However, this role helped solidify a strong feedback loop between BCGC's internal training and hiring.

Some key characteristics enabled EmPOWER Maryland to be particularly effective at creating opportunities for BCGC. First, weatherization is an extremely labor-intensive activity that cannot be mechanized. In comparison to policies like cap-and-trade, which have bigger implications for large-scale emitters, weatherization necessitates a large skilled workforce on the ground. Second, the policy created additional jobs. Before EmPOWER Maryland, very limited jobs in weatherization already existed. The policy did not merely shift

industry practices, but actually enabled significant job expansion in the sector. Third, people with high barriers to unemployment were able to fill these new jobs. Green economic transformation engages diverse occupations that require a wide range of skill sets. While weatherization requires critical thinking and problem solving, it does not require advanced degrees.

The organization's political savvy allowed it to position itself best to benefit from the new weatherization policy, as well as green economic development more generally. Civic Works' ability to anticipate the effects of the EmPOWER Maryland allowed them to be at the table to bid for the contracts through their social enterprise and develop job training accordingly. Civic Works has participated in broader green labor strategies by working closely with Baltimore's WIB in formulating the city's future green economy plans. After the Brookings Institution conducted a regional green job analysis for Baltimore County, the WIB organized a series of roundtable discussions to brainstorm sector strategies for the green economy. Civic Works was among the 20-some organizations invited and continues to work with both the city and the WIB to implement the plan. This has allowed the actors in Baltimore to work together to develop a more methodological and systematic approach to linking workers to economic development activities (Taylor 2013).

BCGC continues to improve its programming by anticipating new industry trends and regulations. As of 2013, BCGC is planning to add a stormwater management track to B'More Green. The impetus to include stormwater management to the weatherization repertoire is in response to new water quality regulations from the state. In order to address total maximum daily load standards in the Chesapeake Bay, the Maryland

Department of Environment is preparing to issue updated water quality permits. To meet these water quality standards, Baltimore has been preparing to pass a resolution to create a stormwater utility fee. This fee is expected to drive demand for homeowners to mitigate stormwater runoff from their properties (Wheeler 2012). BCGC intends to incorporate residential green infrastructure retrofitting into its social enterprise (Mello 2013b). Through Retrofit Baltimore's existing demand-generation efforts, BCGC also hopes to educate homeowners about the merits of both energy efficiency and stormwater management measures through the demand response program and then serve as a one-stop shop for comprehensive indoor and outdoor home improvement services.

Recruitment

In focusing on growing the demand for labor in energy efficiency, B'More Green has also taken steps to ensure that people with high barriers to employment can step into those new jobs. To fulfill its objective of creating more job opportunities for disadvantaged workers, B'More Green conducts outreach and recruitment to better reach low-income and low-educated people. Like most other job training programs, BCGC relies heavily on word of mouth from friends and family members. More notably, the program actively recruits from other agencies that provide other social services, such as welfare, housing, or substance abuse, child support, or parole programs. These programs offer referrals to BCGC for job-ready individuals (Mello 2013).

B'More Green intentionally limits its eligibility requirements to accommodate formerly incarcerated workers, as well as those with low education. Participants simply

need to be over 18 years old, be drug free, be able to pass a respiratory exam, reside in Baltimore, have no sex offenses on their records, and attend a mandatory informational session about the program.

Despite the low eligibility barriers, the performance-driven nature of grant requirements, as well as limited program capacity, drives B'More Green to be selective about their admissions. At 3%, the acceptance rate for weatherization installers is low: the program admits cohorts of four to six people out of a pool of 150-200 applicants at a time and graduates about 25 annually (Fundales 2013). The application process itself is designed to attract applicants who are strongly committed to and enthusiastic about the training. The program intentionally requires applicants to make four to five trips to the center for a series of information sessions, a background check, a drug test, and at least two one-on-one interviews with program staff. In addition to serving as an entrance interview, this process allows BCGC to conduct an initial case management assessment to understand what kind of additional support a candidate would require if accepted.

Interviews also function as a period to help applicants make preparations to begin the training. Taking time off from employment requires a significant degree of pre-planning, often coordinating with other household members or relatives, to be able to support oneself, as well as dependents or other family members. During the interview process, BCGC staff assist candidates in making those arrangements while assessing their abilities to take initiative. The people who do not finish the program tend to drop out due to personal circumstances, such as family illnesses or crises (Mello 2013). The classroom period tends to be the most difficult aspect since it is unpaid. BCGC has found that

providing breakfast and lunch has been an effective way to increase retention and alleviate some financial burdens while participants are enrolled in the program.

Job Training and Placement

Civic Works' direct experience in the field through EnergyReady has helped the organization to understand the specific needs of the sector and tailor its training accordingly. Unlike Oakland's multi-sector training approach, BCGC only offers training in brownfields remediation and energy efficiency. This narrow focus has allowed the program to refine the curriculum to include only the skills necessary for workers to thrive in a weatherization retrofitting occupation.

In the energy efficiency track, B'More Green's classroom curriculum lasts for three months. The program provides just the certifications necessary to work as a weatherization retrofitter in Maryland, including certifications for OSHA construction safety; EPA renovation, repair, and painting; and weatherization pre-tactics and tactics. Environmental literacy is not included because it is viewed as non-essential for conducting weatherization work (Mello 2013).

What distinguishes BCGC from many other job training models is its social entrepreneurship component. EnergyReady also allows BCGC to straddle both the demand and supply sides of the labor market. EnergyReady is certified by the Building Performance Institute and has a reputation for being a reliable and effective player in the industry. The training program has a direct relationship with EnergyReady. After participants complete the classroom training, they transition to paid on-the-job training

positions with EnergyReady. Typically, the on-the-job training lasts for two months, but the timeframe has a soft deadline (Mello 2013). This allows participants greater flexibility in the job placement process. If placement takes longer than anticipated, a participant can still maintain paid work with EnergyReady for a longer period of time. Alternately, if EnergyReady is experiencing a high volume of work, it can easily take on some graduates as permanent staff. The idea is to facilitate a smooth transition between training and placement by minimizing the gap of unemployed time between them.

As the umbrella organization for B'More Green and EnergyReady, BCGC is able to leverage its own dual-status as a contractor and workforce provider to facilitate placements for its graduates. Due to the small class size, energy efficiency placements happen on an individualized basis. Rather than conducting a traditional interview process, B'More Green arranges "workday interviews" in which the worker is sent to do a trial day of work with a potential employer, allowing both employer and employee to evaluate the fit. The employer pool comes from a smaller group of contractors that the organization knows well. As an active member of the local chapter of Efficiency First, a national non-profit trade association for the home performance industry, EnergyReady attends monthly meetings to network with other firms in the field. Moreover, EnergyReady is present at all city bid meetings with other weatherization contractors and is viewed by other contractors as understanding the industry as "one of them" (Mello 2013).

Box 2: Program Performance Snapshots of B'More Green

- *Program graduates:* 4-6 students per cohort and about 25 graduates per year
- *Program completion rate:* 90%
- *Job placement rate:* 90%
- *Job retention rate:* 65% after one year
- *Average wage:* \$13.27 per hour
- *Demographics:* 94% African American. In the energy efficiency track, 11% have less than a high school degree and 56% only have high school/GED-level educations. 95% of participants are veterans and 92% have criminal history.

Overall, B'More Green achieves a very high rate of program completion and job completion. The program also directly contributes to Baltimore's green economy: its graduates nearly all get immediately placed in jobs that they were specifically trained for in home or commercial weatherization firms. Moreover, B'More Green trainees tend to have lower education levels than many other job training programs and nearly all come to the program with some criminal background. As of 2013, 92% of all trainees have a criminal history (excluding sex offenses). Of those, 53% have been arrested. Yet, this success must be taken with a grain of salt: B'More Green trains a very small number of workers each year. While this enables the program to devote significant more attention and case management to each participant, the small scale limits the programs actual effect on the overall green labor force in Baltimore.

FACTORS IMPACTING PROGRAM PERFORMANCE

Oakland and Baltimore provide two very contrasting models for tackling green workforce development. Their respective supply- versus demand-side approaches to program

design are reflected in subsequent differences in their program outcomes, and the two cases illustrate the difficulty in achieving green outcomes while still maintaining high performance on the traditional measurements of workforce development. B'More Green's specialization in emerging industries has allowed BCGC to contribute directly to burgeoning green sectors in Baltimore, but the size of these industries is limited and the longevity of jobs in those sectors is unclear. Oakland, in comparison, feeds a greater number of workers into construction and building trades with well-established long-term career pathways at the cost of losing control over the "greenness" of its job placements.

One of the biggest differences between the two programs is how each contributes to greening the economy, as indicated by the types of jobs their graduates obtain. In her book, *Emerald Cities: Urban Sustainability and Economic Development*, Joan Fitzgerald (2010) identifies three types of green economic development strategies: linking strategies (one that connects labor markets to the economy), transformational strategies (one that allows existing businesses to expand into the green economy), and leapfrogging strategies (one that aims to develop a new sector where one did not previously exist). As workforce development programs, both are inherently linking strategies, but the Oakland Green Jobs Corps also takes a transformational approach while BCGC takes a leapfrogging one.

The combined effect of all three of its programs working in tandem gives BCGC access to influence the direction of Baltimore's overall green economic development trajectory as a leapfrogging strategy to support an emergent energy efficiency sector where one did not previously exist. BCGC's graduates, placed entirely in small- to mid-

sized commercial and residential energy efficiency firms, are filling the flood of new jobs in the city's booming weatherization industry.

Oakland Green Jobs Corps graduates, on the other hand, are union-tracked and tend to work for large-scale Bay Area constructions projects. Union labor pipelines offer more job placement opportunities for more workers who have a wider array of skills. While working with the union system has enabled the program to send a larger number of people into the job market with green skills, it has also limited the program's ability to ensure that those workers contribute to the green economy. In fact, the most popular occupations for graduates span a range of non-environmental trades, such as carpentry, masonry, and construction (Cypress Mandela 2011).

Although the Green Jobs Corps does not focus on growing new green industries, it increases the green capacities of existing firms. While these job titles may not be inherently environmental at first glance, many of the union chapters are explicitly green-oriented or require knowledge of green practices. For example, the Laborers' Local 67 Union exclusively engages in asbestos, lead, and mold abatement and the Cement Masons Local 300 Union is known for green construction technologies and sustainable material sourcing (Shanks 2013).

On top of meeting green outcomes, both programs aim to serve people with high barriers to employment—primarily focusing on socioeconomic barriers of education, criminal history, and veteran status. The characteristics of the participants reflect the occupations that the respective programs target. Union-set requirements of high school degrees or GEDs and driver's licenses directly transfer to Green Jobs Corps requirements.

Given the more stringent entry requirements of many unions, Oakland trainees tend to have higher levels of education and less criminal records. Some unions, such as the electricians union, even call for advanced mathematics such as geometry and trigonometry. Others restrict people who have been ticketed from driving under the influence from crane or vehicle operation or felons from conducting any in-home construction. While the program itself does not explicitly discriminate against veterans or workers with criminal history, the union-set conditions indirectly raise the bar for many disadvantaged workers.

B'More Green's approach ensures that workers in most need are actually able to fill policy-driven labor demand. Because B'More Green trainees take non-union paths to smaller firms with less upfront requirements, the Center has been able to actively lower barriers to training enrollment. Like many job training programs, B'More Green initially required participants to possess a high school diploma or GED. They found, however, that as long as trainees learned job-specific skills, high school-level education did not correlate to job performance. Now, they limit prerequisites to only those set by employers (such as age and occupational certifications). BCGC even lobbied to keep these barriers low when Baltimore was considering regulations prohibiting ex-offenders from working in weatherization. Indeed, nearly all of its program participants have some type of criminal history and are still able to obtain placements directly out of the program.

BCGC's 90% placement rate indicates that such barriers need not inhibit employment. That said, the job retention rate after one year drops to 65% (Fundales 2013). Because weatherization work is typically contract-based, this statistic may

overstate unemployment for workers who are simply between contracts. But it raises the question of whether such a narrow training focus hinders job competitiveness once workers have to navigate job searches without assistance from training programs. B'More Green's focus on disadvantaged workers also limits the program's ability to scale up. Because the program only trains six workers at a time, it can devote more hands-on, individualized attention to both the on-the-job training and the job placement process. At five times of the size of B'More Green's energy efficiency track, the Oakland Green Jobs Corps is able to train significantly more workers and contribute a larger trained workforce to the local economy.

With an initial placement rate of 70%, the Oakland Green Jobs Corps' job placement looks at first glance less effective than B'More Green's. However, because the Corps prepares all of its trainees for union entry, graduates often face more secure long-term job prospects. Construction trades also tend to operate on contracts (though some firms retain workers in their permanent workforce). But unlike weatherization, construction contracts commonly last several years. Moreover, unions help to mitigate the job insecurity in contract-based occupations. Not only do local unions continually facilitate job placements once assignments end, they also specifically give Green Jobs Corps graduates a competitive advantage through higher priority for assignment.

These differences have potentially significant effects on graduates' longer-term competitiveness in the job market. The RFP's provision for well-rounded training, as well as the region's union-dominant context, has reinforced the program's emphasis on building a wide range of skills. Thus, although the construction industry experienced a dip

during the recession, many Green Jobs Corps graduates have been able to regain employment once the economy started to improve (Shanks 2013). While there are many criticisms of unnecessary over-certification, providing a broader set of credentials can be one way allow workers to adapt to meet changes in industry demands.

Though innovative, BCGC's enterprising approach has limitations as a long-term strategy. The influx of funding for energy efficiency is still sustaining a thriving weatherization industry, but funding will subside and the industry likely plateau or decline as those needs become less critical. Because Oakland Green Jobs Corps graduates are certified and trained in a wider cross-section of skills, they are better equipped to adapt to shorter-term changes in local economies. Whether BCGC graduates, who are trained more narrowly to become weatherization contractors, will have enough transferrable skills to move to occupations in other sectors remains to be seen.

FUTURE IMPLICATIONS FOR GREEN WORKFORCE DEVELOPMENT PROGRAMS

Effectively implementing green workforce development to meet social, economic, and environmental objectives is challenging. In practice, operationalizing green jobs training programs entails many tradeoffs due to constraints of the existing workforce landscape and resource and staff capacity. The lessons learned from Oakland and Baltimore can inform other cities' efforts to promote sustainable labor practices as a green economic development strategy. Most importantly, these examples help to reveal how other programs may mitigate the impacts of tough tradeoffs.

Because green economic development involves cooperation among government, non-governmental organizations, and private employers, these recommendations are framed from the workforce perspective, but not necessarily directed solely at workforce training programs. In many instances, a wide range of stakeholders can take agency in initiating and carrying out these efforts.

Programs that opt to take an occupational approach with more generalized skills training should make sure that they do not lose sight of the green in placement by strengthening intermediary efforts to specifically green firms. Because green jobs are so cross-cutting, unlike construction and building trades, this can be difficult to do in cities where green businesses are not organized or accessible to workforce programs. Forming green business coalitions, such as the council group originally proposed to accompany the Oakland Green Jobs Corps, to share some of the intermediary functions with training programs can provide a formal way for green firms to communicate and connect with workforce actors. Cities, WIBs, non-governmental organizations, workforce training programs, and the businesses community can help initiate such a group. Having an organized network in place can help solidify standardized pathways to available green jobs in the same way that unions have provided Corps graduates with a structured process to enter jobs.

Capitalizing on regulation-generated green jobs is an innovative way for workforce programs to stay ahead of the curve and anticipate trends in green labor demand. Because a standardized set of “green skills” does not exist, policy-driven programs can help couple the narrower training curriculum with more widely applicable job readiness

components to build transferrable skills. To some degree, this may be an issue of credentialing. For instance, perhaps BCGC can help participants pass the GED through an accelerated post-training boot camp or even as part of the training itself. When programs lack staff capacity to provide that level of training, they can—and often have—paired with local community colleges that typically have infrastructure in place to provide a variety of certifications. BCGC is also currently exploring alternative certification options to the GED to attest to the basic math and literacy skills that trainees learn through B'More Green. In pursuing such alternatives, programs should consider how and whether firms recognize other credentials.

In addition to basic skills certification, programs should also consider which skills overlap into other related occupations and sectors to better emphasize transferrable skills in the training. Home weatherization tactics, for instance, entail insulation, caulking, carpentry, and other aspects of building construction. Demonstrating how trainees can market these hard skills outside of the weatherization sector can help them understand options in the event of stagnation in the energy efficiency sector.

Aside from human capital considerations, green workforce programs can benefit from learning how to effectively leverage environmental policies. In order to take advantage of new green jobs that policies may create, programs must first be able to anticipate new policies and understand how they will be implemented. BCGC's understanding of stormwater management goals enabled it to identify ways to reduce nonpoint source stormwater runoff through distributed green infrastructure retrofits. Working with city environmental agencies or sustainability offices is a good way for programs to build long-

term relationships with the environmental community and anticipate the demands created by environmental policymaking. In doing this, BCGC has ensured its seat at the table on green economy discussions at the city.

The green economy is continually evolving as new environmental priorities arise. The policy-driven approach also requires significant program flexibility and adaptive capacity to continually react to an ever-changing sustainability agenda that may jump from energy to water to waste. So far, BCGC has been able to adapt and expand its programs very effectively to support Baltimore's green efforts on multiple fronts.

BCGC's adaptiveness begs the question of whether green workforce development programs can go a step further than merely anticipating policy to actually designing environmental policies that create jobs for disadvantaged workers. In the same way that job training programs, unions, and workforce development non-profits have advocated for living wage standards and local hiring clauses in real estate development projects, these groups can also push to integrate for such measures in environmental programs. For example, if Baltimore had instituted local hiring requirements for energy efficiency retrofitting, the city would have been able to more explicitly support jobs for Baltimore residents. With a growing understanding of which policies have empirically done so and why, policymakers and green jobs training programs have an opportunity to craft programs that not only generate demand for jobs in green industries, but also deliberately incorporate stipulations for employing disadvantaged workers when possible, as well as maintaining living wages and good benefits in those positions.

The environmental community has historically operated apart from workforce and economic development ones. Promoting environmental objectives will require workforce development groups to better navigate an added dimension of policy considerations, stakeholders, and even federal programs. Although many cities are now framing their environmental plans in terms of the environmental, economic, and equity goals of sustainable development, fundamental changes to environmental policy have not followed. With a greater understanding of how and why various types of policies have directly increased demand for a skilled workforce in green sectors, policymakers can construct policies that deliberately and strategically support new green jobs, and workforce training providers can shape their programs accordingly to ensure that green jobs can benefit populations most in need.

WORKS CITED

- Barton, Paul. 1990. Skills Employers Need: Time to Measure Them? Princeton, NJ: Educational Testing Service.
- Brookings Institution. 2009. Sizing the Clean Economy.
http://www.brookings.edu/~media/research/files/reports/2011/7/13-clean-economy/0713_clean_economy.pdf.
- Bureau of Labor Statistics (BLS). 2010. Green Goods and Services Industries by NAICS Code.
- . 2011. Employment in Green Goods and Services – 2011.
<http://www.bls.gov/news.release/pdf/gggcew.pdf>.
- . 2013. Databases, Tables & Calculators by Subject. data.bls.gov.
- Cappelli, Peter. 1995. Is the “Skills Gap” Really about Attitudes? California Management Review. Summer 95, Vol. 37 Issue 4, 108-124.
- City of Oakland, 2007. Resolution Authorizing the City Administrator to Proceed With Multiple Energy Efficiency Projects. Accessed May 22, 2013.
<http://clerkwebsvr1.oaklandnet.com/attachments/16462.pdf>.
- City of Oakland. 2008a. Oakland Green Jobs Corps Request for Proposals. Accessed May 22, 2013.
http://www.oaklandnet.com/documents/030408_oakland_green_jobs_corps_rfp.pdf.
- City of Oakland 2008b. Oakland City Council Resolution. Accessed May 22, 2013.
<http://clerkwebsvr1.oaklandnet.com/attachments/19923.pdf>.
- Committee for Economic Development (CED). 1984. Investing in our Children Committee for Economic Development.
- Cypress Mandela. 2011. Cypress Mandela Training Center, Inc. Pre-Apprentice Training Program. Obtained through personal communication with Cypress Mandela.
- DSIRE. 2012. “Maryland Incentives/Policies for Renewables & Efficiency.” Accessed May 22, 2013. Last modified December 13, 2012.
http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MD16R&re=0&ee=0
- Fisher, Sarah. 2009. “City to Get \$15.7 Million to Weatherize Homes.” Baltimore Sun, June 23, 2009. Available at:

http://articles.baltimoresun.com/2009-06-23/news/0906220049_1_weatherization-energy-audits-energy-bills.

Fitzgerald, Joan. 2010. Emerald Cities: Urban Sustainability and Economic Development. New York: Oxford University Press.

Fundales, Gicelle. 2013. Phone interview by Louise Yeung on April 26, 2013.

Giordano, Lorraine. 2013. Program Analyst, Workforce Investment Board, City of Oakland. Phone interview by Louise Yeung on February 15, 2013.

Hodges, Sylvester. 2013. Director of Training, Cypress Mandela Training Center. In person interview by Louise Yeung on January 24, 2013.

H.R. 6. 2007. Energy Independence and Security Act. 110th Congress. <http://www.gpo.gov/fdsys/pkg/BILLS-110hr6enr/pdf/BILLS-110hr6enr.pdf>.

H.R. 2847. 2007. Green Jobs Act of 2007. 110th Congress. <http://thomas.loc.gov/cgi-bin/bdquery/z?d110:HR02847:@@L&summ2=m&>

Jones, Van. 2008. The Green Collar Economy. New York: HarperCollins.

Kim, Ian. 2013. Co-Founder, Rebuild the Dream/Former Green-Collar Jobs Campaign Director, Ella Baker Center for Human Rights. Phone interview by Louise Yeung on March 5, 2013.

Kirsch, Emily. 2013. Ella Baker Center. In person interview by Louise Yeung on January 10, 2013.

Mello, John. Director, Baltimore Center for Green Careers. Phone interview by Louise Yeung on February 13, 2013.

Nguyen, Tram. 2013. Community Assessment, Planning, Education, and Evaluation, Alameda County Public Health Department. In person interview by Louise Yeung on January 28, 2013.

Oakland City Planning Commission. 2007. Director's Report, September 19, 2007. <http://www2.oaklandnet.com/oakca/groups/ceda/documents/webcontent/dowd009191.pdf>.

Pinderhughes, Raquel. 2007. Green Collar Jobs: An Analysis of the Capacity of Green Businesses to Provide High Quality Jobs for Men and Women with High Barriers to Employment.

Pinderhughes, Raquel. 2013. Professor, Department of Urban Studies and Planning, San Francisco State University. In person interview by Louise Yeung on January 24, 2013.

Pindus, Nancy , C. O'Brien, M. Conway, C. Haskins, and I. Rademacher. 2004. Evaluation of Sectoral Employment Demonstration Program. The Urban Institute/The Aspen Institute.

Pollin, Robert, J. Wicks-Lim, H. Garrett-Peltier. 2009. Green Prosperity: How Clean Energy Policies can Fight Poverty and Raise Living Standards in the United States.
http://docs.nrdc.org/globalWarming/files/glo_09062504a.pdf.

Strong, Kenneth. 2012. Testimony of Ken Strong to the Maryland Public Service Commission.

Strong, Kenneth. 2013. Assistant Commissioner, Baltimore City Department of Housing and Community Development. Phone interview by Louise Yeung on March 9, 2013.

Shanks, Eric. Project Coordinator, Cypress Mandela. Phone interview by Louise Yeung on April 29, 2013.

Strawn, Julie and K. Martinson. 2000. *Steady Work and Better Jobs: How to Help Low-Income Parents Sustain Employment and Advance in the Workforce*. New York: Manpower Demonstration and Research Corporation.

Taylor, LiLi. 2013. Executive Liaison for Workforce Policy, Mayor's Office of Economic Development/Baltimore Workforce Investment Board. Phone interview by Louise Yeung on February 13, 2013.

Wheeler, Tim. 2012. "Baltimore takes first step toward setting storm-water fee." Baltimore Sun, June 6, 2012. Available at:
http://articles.baltimoresun.com/2012-06-06/features/bal-baltimore-council-eyes-step-toward-stormwater-fee-20120606_1_storm-water-fee-storm-drains-bay-cleanup

Workforce Investment Act (WIA). 1998. Public Law 105-220. 105th Congress.
<http://www.doleta.gov/usworkforce/wia/wialaw.pdf>.

WORKS CONSULTED

American Council for an Energy-Efficient Economy (ACEEE). 2012. "State Energy Efficiency Policy Database: Maryland." Accessed May 22, 2013.
<http://aceee.org/sector/state-policy/maryland#Energy>.

Bernhardt, Anetta and Thomas Bailey. 1998. *Making Careers out of Jobs: Policies to Address the New Employment Relationship*. New York: Columbia University, Institute on Education and Economy.

Evans, C. and Richard Kazis. 2000. *Improving the Employment Prospects of Low Income Jobseekers: The Role of Labour Market Intermediaries*. New York: Rockefeller Foundation.

Giloth, Robert P. 2004. *Workforce Development Politics: "The 'Local' in Workforce Development Politics*. Philadelphia: Temple University Press.

Harris, Zakiya. Founder, Grind for the Green. In person interview by Louise Yeung on January 16, 2013.

Lautze, Steve. Green Business Specialist, Office of Economic Development, City of Oakland. In person interview by Louise Yeung on January 14, 2013.

Ralston, David. 2013. Project Manager, City of Oakland Community and Economic Development Agency. In person interview by Louise Yeung on January 28, 2013.